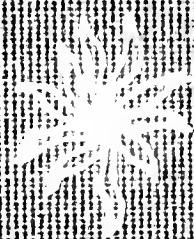


TIMELY TOPICS

FOR
TEACHERS





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TIMELY TOPICS

FOR

TEACHERS

1907



THOS. SCHOLLES & COMPANY

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PUBLISHERS' NOTE

In the matter of testing the qualifications of the teachers in the public schools, there has been for many years a notable lack of progress. Even in the States which are deemed most advanced in their educational system there has been a disposition to cling to the old plan of periodical re-examinations of teachers, despite the needless drudgery involved in these repeated tests.

Iowa has taken the lead in the adoption of a better plan. That the teacher has not ceased to grow, but has striven to keep abreast of the times in educational thought and in knowledge of the world's work, can be demonstrated in a better way than by going through the old routine of questions and answers relating to the branches taught. The ability to prepare a thesis, or essay, on a topic in pedagogy or in the line of current events, is an evidence of advancement in professional or general culture.

The school law of Iowa, as recently amended, provides that certificates of the first grade "shall be renewable, without examination, provided the applicants shall show, by examination or otherwise, that at least one line of

professional inquiry has been successfully conducted during the life of the certificate;" and that holders of certificates of the second grade shall have "the privilege of one renewal, without further examination, under the same rules."

The essential features of the new plan are set forth in the following extract from the regulations adopted by the Iowa Educational Board of Examiners, governing the renewal of county certificates for teachers:

Regulations 1 and 2 (c).

The application for renewal shall also be accompanied by a reasonably complete paper, written by the applicant in the presence of a county superintendent or of some one selected by him. Such paper may be written on any one of such dates as the superintendent may appoint, on a topic selected from the list given under Regulation 4 and assigned at the time by him. The object is to enable the Examining Board to form a correct estimation of the applicant's accuracy in penmanship, in capitalization, in punctuation, and in spelling, as well as his grasp of the topic considered, and to judge of his ability to express his thoughts in correct English.

Regulation 4:

The paper required under "c," Regulations 1 and 2, will be written on one of the following topics:

The educational theories of Rousseau.

The doctrine of interest.

A discussion of Herbert Spencer's Theory of Punishment.

The use of the study period.

The Panama Canal.

Reclaiming the arid lands in the West.

The value of handwork in public schools.

The investigation of a subject assigned is a comparatively easy matter to those who have access to carefully selected libraries, including the latest books relating to it, but the work becomes difficult where the conditions are otherwise; and in any event, the investigator will be

greatly aided, and a waste of time and effort avoided, by the possession of a condensed, accurate, and logical summary of the essentials of the theme.

It is the purpose of this little book to present the necessary data as a basis for the preparatory study of the themes prescribed, together with a conspectus of helpful books for such further study of them as may be desired, and with information as to where and how these may be obtained.

The publishers hope that the "Timely Topics" will prove useful, not only to the teachers and school officers who may read it with reference to theses, but to all who are seeking a condensed presentation of the subjects as a matter of general reading or for whatever purpose.

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I.

THE EDUCATIONAL THEORIES OF
ROUSSEAU.

Jean Jacques Rousseau, "the paradox of moralists, a strange compound of the best and the worst in human nature," was a Swiss agitator whose theories have provoked much discussion. After sending his own children to an asylum for foundlings, and living in unbridled license, he sought to become a reformer, and invoked for all children an extravagant solicitude on the part of their parents. While his sincerity is conceded, his theories are a strange compound of the philosophic and the untenable. His theory of education is set forth in a nondescript volume entitled, "Emile," from the name of the imaginary youth described in it.

Emile is an orphan, and is reared in solitude by a "governor" of adult years. From the early life of Emile, both family influence and school training are alike totally eliminated; thus he has no real home, no childhood companions, no school associations. It is an error to assume that this is "getting back to nature;" for though we ignore the school, the relations of the family have existence in the natural state, and cannot consistently be ignored.

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But so radical was Rousseau that he deemed almost everything wrong in society as he found it, and there seemed to be a merit in a total reversal of existing conditions.

"Coming from the hand of nature," he says, "everything is good; in the hands of man, everything degenerates. Man obliges one soil to nourish the productions of another, one tree to bear the fruits of another; he mingles and confounds climates, elements, seasons; he mutilates his dog, his horse, his slave. He overturns everything, disfigures everything; he loves deformity, monsters; he desires that nothing should be as nature made it."

A statement so insane in its pessimism as this has the effect to startle those who have thought not of nature, but only of art; and thus it has been of service in awakening teachers and parents to a realization of the great facts of nature, and of the mission of art to assist and perfect nature, rather than to thwart it.

"Childhood," Rousseau declares, "has its own methods of seeing, thinking, and feeling. Nothing shows less sense than to try to substitute our own methods for these. I would rather require a child ten years old to be five feet tall than to be judicious. * * * The earliest education ought to be purely negative. It consists not in teaching truth or virtue, but in shielding the heart from vice

and the mind from error. If you could do nothing at all, and allow nothing to be done; if you could bring up your pupil sound and robust to the age of twelve years, without his knowing how to distinguish his right hand from his left, the eyes of his understanding would from the very first open to reason. Without a prejudice or a habit there would be in him nothing to counteract the effect of your care. Before long he would become in your hands the wisest of men."

Quick's comment upon this is as follows: "This governor is to devote himself for some years entirely to imparting to his pupil these difficult arts—the art of being ignorant and of losing time. Till he is twelve years old, Emile is to have no instruction whatever."

Of discipline Rousseau says:

"Treat your pupil as his age demands. Never, absolutely never, command him to do a thing, whatever it may be. Do not let him even imagine that you claim any authority over him. Let him know only that he is weak and you are strong; that from his condition and yours he is necessarily at your mercy. Let him know this, learn it, and feel it. Let him know that upon his haughty neck is the stern yoke which nature imposes upon man, the yoke of necessity, under which every finite being must toil. Let him discover this necessity in the

nature of things; never in human caprice. Let the rein that holds him back be power, not authority. Do not forbid, but prevent, his doing what he ought not; and in thus preventing him, use no explanations, give no reasons. Exercise his body, his senses, faculties, powers, but keep his mind inactive as long as possible. Distrust all the sentiments which he acquires previous to the judgment which should enable him to scrutinize them. Prevent or restrain all foreign impressions; and in order to hinder the rise of evil, be not in too great a hurry to instill good; for it is such only when the mind is enlightened by reason. Look upon every delay as an advantage."

Quick remarks: "The reader will probably have concluded by this time that no child can possibly be so educated as to resemble Emile, and that no wise father would so educate his son if it were possible. A child who does not understand what a command is, and who can be induced to do anything for another only by the prospect of laying that person under an obligation, who has no habits, and is guided merely by his inclinations—such a child as this is, fortunately, nothing but a dream of Rousseau's. But fantastical, as Rousseau often is, the reader of his 'Emile' is struck again and again, not more by the charm of his language than by his insight into child nature, and the wisdom of his remarks upon it."

Says Rousseau: "We never know how to put our-

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selves in the place of children; we do not enter into their ideas, we lend them our own; and following always, our own train of thoughts, fill their heads with extravagance and error, even while we are discussing incontestable truths. * * * I wish that some judicious hand would give us a treatise on *the art of studying children*—an art of the greatest importance to understand, though fathers and preceptors know not as yet even the elements of it.” The wave of “child study” which swept over this country some years ago was but a belated response to this appeal of that strange but sincere, earnest, and devoted advocate of the children.

At twelve years, the age at which the American boy of to-day enters upon the work of the seventh grade, Emile begins to study in earnest. Before this time, indeed, he has acquired some knowledge of reading, acting on his own incentive wholly. Now he studies with some system. He learns things, rather than words. He learns largely by object teaching. He acquires a knowledge of physics by experiments. His motive is interest and a sense of his own necessities. He takes nothing upon authority, but proves all things for himself.

Emile is to read what interests him. Rousseau says:

“Since we must have books, there is one which, to my mind, furnishes the finest of all treatises on education according to nature. My Emile shall

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read this book before any other. It shall for a long time be his entire library, and shall always hold an honorable place. It shall be the text on which all our discussions of natural science shall be only commentaries. It shall be a test for all we meet during our progress toward a ripened judgment; and so long as our taste is unspoiled, we shall enjoy reading it. What wonderful book is this? Aristotle, Pliny, Buffon? No; it is 'Robinson Crusoe.' "

Quick remarks: "As Rousseau found the root of all evil in the actions of man upon man, he sought to dis sever his child of nature as much as possible from his fellow creatures, and to assimilate him to Robinson Crusoe."

With all its eccentricities, the "Emile" of Rousseau probably was, as Quick supposes, the most influential book ever written on the subject of education. In the language of surveyors, it drew a "correction line," from which true measurements might be made. It awakened a new interest in children and in child life. Here are some of the educational maxims which may be collected from it:

"All that we have not at our birth, and that we need when grown up, is given us by education."

"He among us who knows best how to bear the good and evil fortunes of this life is, in my opinion, the best educated."

"He who has lived most is not he who has num-

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bered the most years, but he who has been most truly conscious of what life is."

"The only habit a child should be allowed to form is to contract no habits whatever."

"Remember that before you venture undertaking to form a man, you must have made yourself a man."

"The noblest work of education is to make a reasoning man."

Of Rousseau's theory of education, Jules Steeg remarks:

"There is absolutely nothing practical in his system. It consists in isolating a child from the rest of the world; in creating expressly for him a tutor who is a phenix* among his kind; in depriving him of father, mother, brothers, and sisters, his companions in study; in surrounding him with a perpetual charlatanism, under the pretext of following nature; and in showing him only through the veil of a factitious atmosphere the society in which he is to live. And nevertheless, at each step it is sound reason by which we are met. By an astonishing paradox, this whimsicality is full of good sense; this dream overflows with realities; this improbable and chimerical romance contains the substance and the

*Of this fabulous bird it should be remembered that but a single phenix was supposed to be living at any one time.

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marrow of a rational and truly modern treatise on pedagogy."

BOOKS FOR REFERENCE RELATING TO THE SUBJECT.

Steeg's Rousseau's "Emile," translated by Eleanor Worthington.

Browning's "Educational Theories."

Seeley's "History of Education."

Skinner's "Schoolmaster in Literature."

Rousseau's "Education According to Nature."

According to Nature.

Hinsdale's "Art of Study."

II.

THE DOCTRINE OF INTEREST.

No other pedagogical topic within recent years has received more attention than that of interest on the part of the pupil. When the pupil is really interested in his work, success is easy. The subject has drawn within its range *apperception* and *correlation*, which possess the first importance in the pedagogy of to-day.

When interest, apperception, and correlation are mentioned, they bring to the mind of the teacher the philosophy of Herbart, the German pedagogist of a century ago.

Herbart sought to construct a tabular grouping of interests in two general classes, each having three subdivisions. The first of the two general classes related to the natural world, and included the sciences which treat of it; the second related to man, and included biography, history, literature, etc.

Herbart set forth the theory that the development of the individual is analogous to the development of the race; that the stages through which the child passes from infancy to maturity corresponded to those which humanity has passed in its progress from primeval barbarism to modern civilization and culture. Following out this theory, it

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is held that the child is most interested in that which delighted the childhood of the race; that the youth, at a certain age, enters into the spirit of chivalry, etc. William James expresses the doctrine of interest very happily in the following general statement:

“Any object not interesting in itself may become interesting through becoming associated with an object in which an interest already exists. The two associated objects grow, as it were, together. The interesting portion sheds its quality over the whole; and thus things not interesting in their own right borrow an interest which becomes as real and as strong as that of any natively interesting thing. The odd circumstance is that the borrowing does not impoverish the source, the objects taken together being more interesting, perhaps, than the originally interesting portion was by itself.”

From this general statement of the doctrine, James proceeds to deduce a general rule, in the following terms:

“Begin with the line of his [the pupil's] native interests, and offer him objects that have some immediate connection with these. Next, step by step, connect with these first objects and experiences the later objects and ideas which you wish to instill. Associate the new with the old in some natural and telling way, so that the interest, being shed along

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from point to point, finally suffuses the entire system of objects of thought."

The word *apperception* has been the subject of some ridicule and of considerable irritation among teachers. In modern pedagogy it has not the meaning which it possessed in the older philosophy. The newer meaning is set forth in the appendix to Webster's "International Dictionary." Used in its modern and pedagogical sense, it is a word of great importance to the teacher of to-day. Apperception is "the coalescence of part of a new idea with an old one by modification, as in all cases of recognition, explanation, or translating the unknown by the known."

Apperception, then, is the acquisition of new knowledge in the light of knowledge already possessed. It is perception of the new in its relation to that which is already known. Correlation, which has a kindred meaning, may be defined as reciprocal relation, and has to do with subjects which, in their nature, possess this reciprocal relation.

Dewey finds that the interest of the pupil is developed in his communications with others in the answers to his questionings, in his constructive work, and in the fitting utterance of his thoughts. Dewey remarks as follows: "Now, keeping in mind these fourfold interests—the interest in conversation, or communication; in inquiry, or finding out things; in making things, or construction; and in artistic

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expression—we may say that they are the natural resources, the uninvested capital, upon the exercise of which depends the active growth of the child.”

Much is said in our time of the “many-sided interest” contemplated by the followers of Herbart. The old courses of study in the institutions of higher education were limited and fixed. Much of the courses of to-day is elective. Formerly it was the aim to secure a harmonious development of all the faculties. Now it is the aim to develop in the individual that which most interests him. He may obtain a smattering of many sciences, and become a tyro in many arts, or he may become the master of a more limited field.

What of the “many-sided interest” in the work of the grades?

McMurry says: “Many have felt that this multiplicity of interests must lead to scattering and superficial knowledge. With the emphasis of motor activities which is now made, many-sided interest would seem to point naturally to many-sided and distracting activity, to multiplicity of employments, to that character which in Yankee phrase is designated as Jack of all trades and master of none. It is often said that the old school course, in contrast to this, was very simple, very thorough, and strong in its disciplinary value. And yet the advocates of a return to a narrow curriculum of two generations ago leave out of consideration some of the chief

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points in the argument. Our children are being educated to live and act and carry on business in a state of society radically different from that of our grandfathers, infinitely more complex and many-sided in its demands upon the citizen. A child educated according to the narrow ideals of the old-fashioned schools would be very poorly qualified, if qualified at all, to meet the demands of the twentieth century."

Attention may be voluntary, or it may be involuntary. Hamilton, in fact, makes three varieties of it. He says: "I am persuaded that we are frequently determined to an act of attention, as to many other acts, independently of our free and deliberate volition. Attention is of three degrees, or kinds. The first is a mere vital and irresistible act; the second, an act determined by desire, which, though involuntary, may be resisted by our will; the third, an act determined by a deliberate volition."

It is objected by some critics of the doctrine of interest, that a dependence upon interest fails to develop the will; that the attention secured by the direct exercise of the will power is most needed; that interest is apt to prove changeable, unsteady, erratic, and emotional. As Locke says, the mastery of one's inclinations is the very foundation of virtue. The child should study what he needs to study,

whether it interests him or not; and if it does not interest him at all, so much greater will be the discipline of his will. Often teachers, and writers of text-books as well, have purposely added to the difficulties and perplexities of the pupil's study, with the purpose of disciplining the will to command a reluctant attention.

McMurry wisely says: "Interest as a support to the will, and even as a will stimulus, has peculiar advantages. It is not, indeed, desired that chance inclinations and feelings shall take possession of the mind, especially not the disorderly and momentary impulses. * * * The solution of this great problem lies not in eliminating and ignoring either the agreeable or the disagreeable features of training, neither in avoiding the difficulties, nor in sacrificing the pleasures of study, but in arousing the motives and interests which will assist the will, giving impetus and strength in the direction in which it turns mental action."

Roark, in his "Method in Education," points out two ways in which the doctrine of interest may be applied. He says:

"All teaching should keep in contact with the learner's interests. This does not mean that teaching shall merely *follow the lead* of the learner's interests. Some critics of the doctrine of interest have created this fallacy to lend point to their objections.

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But the doctrine of interest may be applied in practice in two ways, *viz.*: (1) Teaching should follow the child's normal and healthy interests as far as they go, and (2) should then create, intensify, and direct new ones. It will bear much repeating that the chief problem of the teacher is to keep alive the multiform interests of childhood, and revive any that may have become atrophied. * * *

The doctrine of interest does not for a moment preclude the idea that drudgery is necessary and healthful; that work that is in itself hard and distasteful is a splendid discipline. It should in every case be interpreted to mean, in its application, that the drudgery must be done, the hard and distasteful work gone through thoroughly, *because of* an abiding interest in something to which they lead."

Putnam makes a careful distinction between natural and unnatural stimuli to attention. He says:

"Stimuli to attention, like stimuli to physical or mental exertion of any sort, may be natural, agreeable, and wholesome, or they may be unnatural, disagreeable, and unwholesome in their ultimate effect. Natural stimuli allure and entice the attention, lay hold upon it with a gentle grasp, and produce no sudden and violent movements. The mind is not forced and dragged along like a resisting child. The activity excited is steady, and grows in intensity. The interest and the attention reach their

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highest pitch by gradual increments, and not by a single unnatural and painful effort. Among such stimuli are the forms, features, qualities, and characteristics of external objects properly presented; and also customary acts, movements, modes of address, and management. Of this kind are the pleasurable feelings of the soul, the emotions, affections, and desires when not unduly excited, and, indeed, all forms of activity within proper limits.

“Among the unnatural stimuli, which are usually harmful, are all harsh and violent incitements, strange and frightful objects suddenly presented, strange sights, sounds, and actions; so also are the uncouth, senseless, and almost barbarous devices sometimes resorted to by unskillful teachers and sensational orators. Such stimuli compel attention for the moment; they produce, for a short time, an intense but painful and exhaustive concentration and activity of the mind, followed of necessity by weariness, weakness, and often disgust. The frequent use of stimuli of this character renders the mind insensible to the influence of milder and more healthful incitements.”

BOOKS FOR REFERENCE RELATING TO THE SUBJECT.

Keith's "Elementary Education."

"Talks to Teachers," by William James.

"Elements of General Method," by C. A. McMurry.

"Interest and Education," by De Garmo.

"The Science of Education," by Herbart.

"Method in Education," by Roark.

III.

A DISCUSSION OF HERBERT SPENCER'S
THEORY OF PUNISHMENT.

The theory of punishment set forth and discussed by the English critic and essayist Herbert Spencer (1820-1905) is to be found in his essay on "Moral Training." From time immemorial the theory has been recognized in part and acted upon in a measure by parents and teachers. It is the theory of natural consequence, or the penalty which nature exacts for the infraction of her laws, as opposed to artificial or arbitrary punishments for wrong conduct.

Like all other theories, it is apt to be misunderstood and misapplied. "An ounce of prevention," says the old adage, "is worth a pound of cure;" and there are natures to which a penalty more or less remote, in the order of nature, offers no terrors sufficient to deter them from evil conduct. The theory, however, contains so much of truth, and is so carefully set forth in its limitations, that it is well worth a careful study.

It is deemed best to present it here, in abridged form, in the exact words of the essay.

SPENCER'S MORAL EDUCATION (Abridged).

The great error made by those who discuss questions of juvenile discipline, is in ascribing all the

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faults and difficulties to the children, and none to the parents. The current assumption respecting family government, as respecting national government, is that the virtues are with the rulers, and the vices with the ruled.

We do not hesitate to say that to parental misconduct is traceable a great part of the domestic disorder commonly ascribed to the perversity of children. We do not assert this of the more sympathetic and self-restrained, among whom we hope most of our readers may be classed, but we assert it of the mass.

Evidently, therefore, the general practice of any ideal system of discipline is hopeless: parents are not good enough.

Moreover, even were there methods by which the desired end could be at once effected, and even had fathers and mothers sufficient insight, sympathy, and self-command to employ these methods consistently, it might still be contended that it would be of no use to reform family discipline faster than other things are reformed. What is it that we aim to do? Is it not that education of whatever kind has for its proximate end to prepare a child for the business of life—to produce a citizen who, at the same time that he is well conducted, is also able to make his way in the world? And does not making

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his way in the world (by which we mean, not the acquirement of wealth, but of the means requisite for properly bringing up a family)—does not this imply a certain fitness for the world as it now is? And if by any system of culture an ideal human being could be produced, is it not doubtful whether he would be fit for the world as it now is?

“But does not this prove too much?” some one will ask. “If no system of moral culture can forthwith make children altogether what they should be; if, even were there a system that would do this, existing parents are too imperfect to carry it out; and if, even could such a system be successfully carried out, its results would be disastrously incongruous with the present state of society; does it not follow that a reform in the system now in use is neither practicable nor desirable?” No. It merely follows that reform in domestic government must go on, *pari passu* with other reforms. It merely follows that methods of discipline neither can be nor should be ameliorated, except by installments.

“At any rate then,” may rejoin our critic, “it is clearly useless to set up any ideal standard of family discipline. There can be no advantage in elaborating and recommending methods that are in advance of the time.” Again we must contend for the contrary. Just as in the case of political government, though pure rectitude may be at present impracti-

cable, it is requisite to know where the right lies, so that the changes we make may be *toward* the right instead of *away* from it; so in the case of domestic government, an ideal must be upheld, that there may be gradual approximations to it. We need fear no evil consequences from the maintenance of such an ideal.

When a child falls, or runs its head against the table, it suffers a pain, the remembrance of which tends to make it more careful for the future; and by an occasional repetition of like experiences, it is eventually disciplined into a proper guidance of its movements. If it lays hold of the fire-bars, thrusts its finger into the candle-flame, or spills boiling water on any part of its skin, the resulting burn or scald is a lesson not easily forgotten. So deep an impression is produced by one or two such events, that afterward no persuasion will induce it again to disregard the laws of its constitution in these ways.

Now in these and like cases, Nature illustrates to us, in the simplest way, the true theory and practice of moral discipline—a theory and practice which, however much they may seem to the superficial like those commonly received, we shall find on examination to differ from them very widely.

Observe, in the first place, that in bodily injuries and their penalties we have misconduct and its consequences reduced to their simplest forms.

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From whatever basis they start, all theories of morality agree in considering that conduct whose total results, immediate and remote, are beneficial, is good conduct; while conduct whose total results, immediate and remote, are injurious, is bad conduct. The happiness or misery caused by it are the *ultimate* standards by which all men judge of behavior.

Note, in the second place, the character of the punishments by which these physical transgressions are prevented. Punishments, we call them, in the absence of a better word: for they are not punishments in the literal sense. They are not artificial and unnecessary inflictions of pain; but are simply the beneficent checks to actions that are essentially at variance with bodily welfare—checks in the absence of which life would quickly be destroyed by bodily injuries. It is the peculiarity of these penalties, if we must so call them, that they are nothing more than the *unavoidable consequences* of the deeds which they follow; they are nothing more than the *inevitable reactions* entailed by the child's actions.

Let it be further borne in mind that these painful reactions are proportionate to the degree in which the organic laws have been transgressed. A slight accident brings a slight pain, a more serious one, a greater pain.

And then mark, lastly, that these natural reactions which follow the child's wrong actions are

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constant, direct, unhesitating, and not to be escaped. No threats: but a silent, rigorous performance.

Still more significant will these general truths appear, when we remember that they hold throughout adult life as well as throughout infantine life. It is by an experimentally-gained knowledge of the natural consequences, that men and women are checked when they go wrong.

Every one has heard others confess that only by "dearly bought experience" had they been induced to give up some bad or foolish course of conduct formerly pursued. Every one has heard, in the criticisms passed on the doings of this spendthrift or the other speculator, the remark that advice was useless, and that nothing but "bitter experience" would produce any effect; nothing, that is, but suffering the unavoidable consequences.

Not only have artificial punishments failed to produce reformation, but they have in many cases increased the criminality. The only successful reformatories are those privately-established ones which have approximated their *régime* to the method of Nature—which have done little more than administer the natural consequences of criminal conduct: the natural consequences being that, by imprisonment or other restraint, the criminal shall have his liberty of action diminished as much as is need-

ful for the safety of society; and that he shall be made to maintain himself while living under this restraint.

Have we not here, then, the guiding principle of moral education? Must we not infer that the system so beneficent in its effects, alike during infancy and maturity, will be equally beneficent throughout youth?

Probably, however, not a few will contend that already most parents do this—that the punishments they inflict are, in the majority of cases, the true consequences of ill-conduct—that parental anger, venting itself in harsh words and deeds, is the result of a child's transgression—and that, in the suffering, physical or moral, which the child is subject to, it experiences the natural reaction of its misbehavior. Along with much error this assertion, doubtless, contains some truth. It is unquestionable that the displeasure of fathers and mothers is a true consequence of juvenile delinquency; and that the manifestation of it is a normal check upon such delinquency.

Thus it is doubtless true that, in so far as the expression of parental feeling is concerned, the principle of the natural reaction is always more or less followed. The system of domestic government ever gravitates toward its right form.

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But now observe two important facts. In the first place, observe that, in states of rapid transition like ours, which witness a long-drawn battle between old and new theories and old and new practices,, the educational methods in use are apt to be considerably out of harmony with the times.

And then observe, in the second place, that the discipline on which we are insisting is not so much the experience of parental approbation or disapprobation, which, in most cases, is only a secondary consequence of a child's conduct; but it is the experience of those results which would naturally flow from the conduct in the absence of parental opinion or interference. The truly instructive and salutary consequences are not those inflicted by parents when they take upon themselves to be Nature's proxies; but they are those inflicted by Nature herself.

The labor of putting things in order is the true consequence of having put them in disorder.

If in the nursery the nurse herself, with many grumblings about "tiresome little things," etc., undertakes the task; if below stairs, the task usually devolves either on one of the elder children or on the house-maid; the transgressor being visited with nothing more than a scolding.

Having refused or neglected to pick up and put away the things it has scattered about, and having thereby entailed the trouble of doing this on some

one else, the child should, on subsequent occasions, be denied the means of giving this trouble. When next it petitions for its toy-box, the reply of its mamma should be—"The last time you had your toys you left them lying on the floor, and Jane had to pick them up. Jane is too busy to pick up every day the things you leave about; and I cannot do it myself. So that, as you will not put away your toys when you have done with them, I cannot let you have them." This is obviously a natural consequence, neither increased nor lessened; and must be so recognized by a child. The penalty comes, too, at the moment when it is most keenly felt.

In the world the penalty of being behind time is the loss of some advantage that would else have been gained: the train is gone; or the steamboat is just leaving its moorings; or the best things in the market are sold; or all the good seats in the concert-room are filled. And every one, in cases perpetually occurring, may see that it is the prospective deprivations entailed by being too late which prevent people from being too late. Is not the inference obvious? Should not these prospective deprivations control the child's conduct also? If Constance is not ready at the appointed time, the natural result is that of being left behind, and losing her walk.

When a boy, old enough to possess a penknife, uses it so roughly as to snap the blade, or leaves

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it in the grass by some hedge-side, where he was cutting a stick, a thoughtless parent, or some indulgent relative, will commonly forthwith buy him another; not seeing that, by doing this, a valuable lesson is lost.

In the first place, right conceptions of cause and effect are early formed; and by frequent and consistent experience are eventually rendered definite and complete. Proper conduct in life is much better guaranteed when the good and evil consequences of actions are rationally understood, than when they are merely believed on authority.

It is a vice of the common system of artificial rewards and punishments, long since noticed by the clear-sighted, that by substituting for the natural results of misbehavior certain threatened tasks or castigations, it produces a radically wrong standard of moral guidance. Having throughout infancy and boyhood always regarded parental or tutorial displeasure as the result of a forbidden action, the youth has gained an established association of ideas between such action and such displeasure, as cause and effect; and consequently when parents and tutors have abdicated, and their displeasure is not to be feared, the restraint on a forbidden action is in great measure removed.

Another great advantage of this natural system of discipline is, that it is a system of pure justice, and will be recognized by every child as such.

Again, the tempers both of parents and children are much less liable to be ruffled under this system than under the ordinary system. Instead of letting children experience the painful results which naturally follow from wrong conduct, the usual course pursued by parents is to inflict, themselves, certain other painful results.

It happens that every transgression comes to be regarded as an offence against themselves, and a cause of anger on their part. Add to which the further irritations which result from taking upon themselves, in the shape of extra labor or cost, those evil consequences which should have been allowed to fall on wrongdoers. Similarly with the children. Penalties which the necessary reaction of things brings round upon them—penalties which are inflicted by impersonal agency, produce an irritation that is comparatively slight and transient; whereas, penalties which are voluntarily inflicted by a parent, and are afterward remembered as caused by him or her, produce an irritation both greater and more continued.

Suppose that when a child, who had been forbidden to meddle with the kettle, spilt some boiling water on its feet, the mother vicariously assumed the scald and gave a blow in place of it; and similarly in all other cases. Would not the daily mis-

haps be sources of far more anger than now? Would not there be chronic ill-temper on both sides? Yet an exactly parallel policy is pursued in after years. A father who punishes his boy for carelessly or wilfully breaking a sister's toy, and then himself pays for a new toy, does substantially this same thing—inflicts an artificial penalty on the transgressor, and takes the natural penalty on himself: his own feelings and those of the transgressor being alike needlessly irritated. If he simply required restitution to be made, he would produce far less heartburning. If he told the boy that a new toy must be bought at his, the boy's, cost, and that his supply of pocket-money must be withheld to the needful extent, there would be much less cause for ebullition of temper on either side; while in the deprivation afterward felt, the boy would experience the equitable and salutary consequence. In brief, the system of discipline by natural reactions is less injurious to temper, alike because it is perceived on both sides to be nothing more than pure justice, and because it more or less substitutes the impersonal agency of nature for the personal agency of parents.

And among the advantages of this method we see—First. That it gives that rational comprehension of right and wrong conduct which results from actual experience of the good and bad consequences caused by them. Second. That the child, suffering

nothing more than the painful effects brought upon it by its own wrong actions, must recognize more or less clearly the justice of the penalties. Third. That, recognizing the justice of the penalties, and receiving those penalties through the working of things, rather than at the hands of an individual, its temper will be less disturbed; while the parent, occupying the comparatively passive position of taking care that the natural penalties are felt, will preserve a comparative equanimity. And Fourth. That mutual exasperation being thus in great measure prevented, a much happier, and a more influential state of feeling, will exist between parent and child.

“But what is to be done with more serious misconduct?” some will ask. “How is this plan to be carried out when a petty theft has been committed? or when a lie has been told? or when some younger brother or sister has been ill-used?”

Already we have shown that by letting a child experience simply the painful reactions of its own wrong actions, a parent in great measure avoids assuming the attitude of an enemy, and escapes being regarded as one; but it still remains to be shown that where this course has been consistently pursued from the beginning, a strong feeling of active friendship will be generated.

What are the natural consequences, say, of a theft? They are of two kinds—direct and indirect. The

direct consequence, as dictated by pure equity, is that of making restitution. An absolutely just ruler (and every parent should aim to be one) will demand that, wherever it is possible, a wrong act shall be undone by a right one: and in the case of theft this implies either the restoration of the thing stolen, or, if it is consumed, then the giving of an equivalent: which, in the case of a child, may be effected out of its pocket-money. The indirect and more serious consequence is the grave displeasure of parents—a consequence which inevitably follows among all peoples sufficiently civilized to regard theft as a crime; and the manifestation of this displeasure is, in this instance, the most severe of the natural reactions produced by the wrong action. “But,” it will be said, “the manifestation of parental displeasure, either in words or blows, is the ordinary course in these cases: the method leads here to nothing new.” Very true. Already we have admitted that, in some directions, this method is spontaneously pursued.

But what it chiefly concerns us here to observe is, that the manifestation of strong parental displeasure, produced by one of these graver offences, will be potent for good just in proportion to the warmth of the attachment existing between parent and child.

By aiming in all cases to administer the natural

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reactions to your child's actions, you will put an advantageous check upon your own temper.

Do not, however, seek to behave as an utterly passionless instrument. Remember that besides the natural consequences of your child's conduct which the working of things tends to bring round on him, your own approbation or disapprobation is also a natural consequence, and one of the ordained agencies for guiding him. The terror which we have been combating is that of *substituting* parental displeasure and its artificial penalties, for the penalties which nature has established. But while it should not be *substituted* for these natural penalties, it by no means follows that it should not, in some form, *accompany* them.

Command only in those cases in which other means are inapplicable, or have failed. But whenever you *do* command, command with decision and consistency.

Let your penalties be like the penalties inflicted by inanimate nature—inevitable. The hot cinder burns a child the first time he seizes it; it burns him the second time; it burns him the third time; it burns him every time; and he very soon learns not to touch the hot cinder. If you are equally consistent—if the consequences which you tell your child will follow certain acts, follow with like uniformity, he will soon come to respect your laws as

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he does those of Nature. And this respect, once established, will prevent endless domestic evils. Of errors in education, one of the worst is that of inconsistency.

Bear constantly in mind the truth that the aim of your discipline should be to produce a *self-governing* being; not to produce a being to be *governed by others*.

BOOKS FOR REFERENCE RELATING TO THE SUBJECT.

"Education," by Herbert Spencer.

"The Making of Character," by McCunn.

IV.

THE USE OF THE STUDY PERIOD.

"What one carries away from Rome," says the proverb, "depends upon what one carries *to* Rome." The force of this saying is obvious. It is likewise true that the benefit which the pupil will derive from his use of the study period will depend very largely upon the spirit which he brings to it, and the preparation which has been made for it. This preparation concerns both the teacher and the pupil, for each has a duty in reference to it.

The *manner* of study is thus commented upon by Page:

"It is of quite as much importance *how* we study as *what* we study. Indeed, I have thought that much of the difference among men could be traced to their different habits of study formed in youth. A large portion of our scholars study for the sake of preparing to recite the lesson. They seem to have no idea of any object beyond *recitation*. The consequence is that they study mechanically. They endeavor to remember phraseology rather than principles; they study the *book*, not the subject. Let any one enter our schools and see the scholars engaged in preparing their lessons. Scarcely one will be

seen who is not repeating over and over again the words of the text, as if there were a saving charm in repetition. Observe the same scholars at recitation, and it is a struggle of the memory to recall the forms of *words*. The vacant countenance too often indicates that these are words without meaning. This difficulty is very much increased if the teacher is confined to the text-book during recitation."

Roark, in discussing the preparation of the lesson by the pupil, makes note of the same tendency. He says:

"On the part of the pupil, preparation is the process of acquiring and assimilating the portion of subject-matter marked off in the assignment of the lesson. Too often the student gets no farther than mere acquisition, and simply *memorizes* the lesson. Assimilation is difficult for the pupil, and testing assimilation is difficult for the teacher. Pupils have been known even to memorize verbally the demonstration of a theorem in geometry! One of the first duties of the teacher is to show the pupil how to prepare a lesson—how to direct effort, and to economize time; how to exert thought power, and to question himself and his text-book while he is studying; and especially, how to *enjoy* the processes of learning facts and understanding them. Under this sort of direction the pupil will find that he

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can economize time and effort, can 'get the lesson' better and more quickly, by going over it not more than three times."

This general statement of the teacher's duty in preparing the pupil to make the most of the study period is reinforced by Hinsdale, who offers specific suggestions as follows:

"Before assigning the lesson for the next recitation, the teacher should carefully inquire whether the pupils need assistance in preparing it, and, if the answer is in the affirmative, he should furnish such assistance before they leave the recitation benches. Words in the lesson may need to be explained, points of difficulty to be set in a proper light, or important features to be pointed out. Frequent are the cases where a hint, or two, a few suggestions, a short explanation, taking perhaps three or five minutes, will save the class from falling to pieces or from "flunking," as the college expression is, at the next recitation. Much depends upon the relation of the last lesson to the new lesson. Subjects and lessons as presented in text-books do not always ascend by an easy grade, at least as measured by the pupil's ability; some subjects and lessons hardly admit of such presentation."

The time of the study period for a particular lesson may be fixed in the school programme or it may be left largely to the choice of the pupil, as is often

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the case in the more advanced grades. Roark holds that the best time for the preparation of a new lesson is just after it has been assigned; that is to say, just at the close of the recitation of the previous lesson in the same branch of study. At this time the pupil will bring to his work any enthusiasm which the recitation may have awakened, and he will have fresh in mind the hints which it may have contained relative to what the study may bring out. Probably, however, most pupils would prefer to have the work of study immediately precede the next recitation, so that the work itself will be fresh in the mind when they have need to make use of it in reciting. The suggestion of Roark carries much weight. Intensified study of a subject immediately preceding a recitation upon it, is apt to be a process of "cramming." It is better that there shall intervene between the study and the recitation a period in which the new knowledge acquired may be digested and assimilated.

Hinsdale gives three rules to be followed by the pupil in "attacking the lesson." "The first rule for the guidance of the pupil," he says, "is to find out the subject of the lesson. What is it all about? is the first question to be asked. * * *

"The next rule is that the pupil should seize the leading subdivisions of the lesson. * * *

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"The next *fact* to be stated is that most lessons present a few points which are so central that they are keys to the whole subject; while the next *rule* is that the pupil should seek to discover such points and make them his own. We are using a military metaphor. When General Grant had carried Missionary Ridge, the whole Confederate position far to the right and far to the left fell easily and speedily into his hands."

The same author impresses the fact that the pupil must know when a lesson is prepared, and what is required in the study of it. "Knowing *about* a thing is not the same as knowing *the thing*. A pupil may have considerable knowledge about the crusades, or about geysers, and not have a clear idea of what a crusade was or a geyser is."

Roark describes the "going over the lesson" for the three times, and sets for the purpose in view for each of these times. He says of the pupil:

"The first time, he looks through the whole lesson in the light of the preliminary drill his teacher has given him; gains thus a general, comprehensive idea of the lesson-whole, in accordance with the analytic principle, 'from the whole to its parts'; refreshes his memory on the last lesson and its connection with the present one; sees at what points the lesson touches his own experiences; and notes the parts that are likely to require the hardest study for their mastery.

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"The second time, he *gets the lesson* as he goes along, mastering it step by step, putting its facts into the memory and weighing their relations and the reasons for their being what they are, challenging the book's statements, looking up other authorities than the text, and forming his own opinions. Pupils should be encouraged at first, and later required, to go beyond the limit of the text-book in their preparation of lessons.

"The third time, he glances the lesson over again, just before recitation, to revivify and fix the salient points, and to make sure he can sustain himself in the coming lesson-discussion with the teacher."

Among the aids to the pupil in studying his lesson, a really good Dictionary is of first importance. The time for learning an unfamiliar word is when it is brought to the notice of the pupil, in reading or in spoken discourse. If it occurs in a lesson, that lesson is not really learned unless the pupil has mastered the word—its meaning and use, its spelling and its pronunciation. The more advanced pupil should note also its etymology, and any peculiarity relating to it.

There are few pupils who fully understand the use to be made of the Dictionary. In the first place, the order of the meanings, as given, should be understood. The order in Webster's "International" is historical, the original, or oldest, meaning being given

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first. This is the true, logical order, although the old meaning may be now wholly obsolete. Thus the first meaning of the word *starve* is to *die*, from whatever cause. The first, or oldest, meaning of *transpire* is to *sweat*. The first, or oldest, meaning of *prevent* is to *precede* or to *go before*.

Many pupils do not note the difference between *obsolete* and *obsolescent*, and the corresponding difference between the abbreviations of these words. Many pupils do not note the delicate differentiation that may be made between synonyms, and have no idea of the meaning of the abbreviation *cf.*, as used in the Dictionary. It is not safe to give a phonetic pronunciation to proper names about which there is any doubt in the mind of the pupil. If the Dictionary is at hand, he can ascertain the correct pronunciation, and thus eliminate any doubt and any danger of embarrassment in reference thereto.

The Dictionary not only gives the spelling and pronunciation of many hundreds of biographical names, but also indicates something of the life of the leading characters in history, in art, and in authorship. It contains, likewise, a gazetteer, and many other features which will throw light upon the lessons of the pupil in school.

The Dictionary should always be accessible to the pupil during the study period, and he should be thoroughly accustomed to its use.

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Good maps, likewise, should be accessible during the period of study. The lesson is not learned if geographical terms connected with it are not understood with full sufficiency for the purpose in hand; and even beyond this it is not likely that the pupil will wander too far afield if he follows out geographical inquiries suggested indirectly by the lesson.

A good library will offer many additional aids to the way of reference books; but Dictionaries and maps are simply indispensable to good work by the pupil, though it does little good to supply them if the pupil be not trained to use them and habituated to consulting them whenever occasion requires.

Lesson notes should be taken by the pupil upon tablets or in memorandum books. New words should be written, for practice, and statements of notable facts should be summarized and recorded. Only a general statement as to this is needed in this general presentation of the work of the study period. Specific written exercises are of course required in their respective subjects.

To summarize, what is most needed for an effective and fruitful employment of the study period is that the pupil shall acquire the habit of clear analysis, correct reasoning, and industry, directed to an intelligent purpose; and that the teacher and the pupil shall co-operate for the attainment of this end.

BOOKS FOR REFERENCE RELATING TO THE SUBJECT.

Roark's "Method of Education."
Bagley's "Educative Processes."
Hinsdale's "Art of Study."

V.

THE PANAMA CANAL.

The construction of an inter-oceanic ship canal across the Isthmus of Panama, which has been undertaken by the Government of the United States, is the most colossal engineering enterprise in history.

The length of the canal, including the extensions in the harbors, is to be over forty-nine miles; the depth, forty-five feet; and the breadth, from two hundred feet (through the deepest cut) to five hundred feet and more. The highest level of the canal is eighty-five feet above the ocean level.

The course of the canal pierces a ridge of rocky land three hundred and thirty-three feet in height above the sea level. Elsewhere it passes through a swamp where it requires great levees to protect it from the in-flowing tide water. Incidental to the construction of the canal itself is the formation of an artificial lake by means of a colossal dam, to impound the waters of the river Chagres at Gatun, near the Atlantic shore. This will prevent the periodic flooding of the river, and, by means of sluices, will supply whatever amount of water may be needed for operating the locks, and for other purposes in time of drought.

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The dam is to be seventeen hundred feet in length, and, with the resulting expense of changing the railway line, will cost perhaps twelve million dollars. The reservoir thus formed will be known as Gatun Lake.

Another artificial lake is to be formed on the Pacific side of the summit, by the construction of three smaller dams in the streams about Sosa Hill, and will be known as Sosa Lake.

In addition to the construction of the mighty dams required to form these lakes, the plan includes the diversion of rivers from their present channels, and the construction of enormous locks.

This stupendous canal enterprise has been undertaken with a full realization of its magnitude and of its difficulties, and in the face of the fact that France, the great nation which had previously made the attempt, utterly failed in it. We are seeking to profit by the experience of that failure, and to avoid the mistakes that were made. Warned by the frightful mortality which attended the construction of the Panama railway following this general route, half a century ago, and by the French experiment, the Canal authorities have labored to supply in advance all the possible hygienic conditions for the laborers in the matter of food, rest, and comfort, with hospitals and expert medical attendance for the sick. Noting the successive failures of different national-

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ities employed to perform the work heretofore, they are carefully choosing their men from those best fitted to endure the ordeal in the trying climate and under the severe conditions experienced in Panama. Jamaican negroes and Mongolian coolies seem to offer the most promise.

Believing that true economy dictates a very large expenditure for machinery, appliances, and temporary tracks, the authorities may make use simultaneously of eighty or perhaps even a hundred large steam shovels, though it will require more than two years to place these in position for operating. For the removal of the mass of earth and rock excavated, which offers a very serious problem, probably three miles of temporary railway track will be required as an auxiliary to each of these steam shovels, making from two hundred and forty to three hundred miles of expensive building, no part of which is likely to be permanent. With these temporary lines of rail must be supplied a great number of cars of special construction, and of locomotive engines.

Already in the great Culebra cut the crest has been lowered from two hundred and thirty-three feet above the sea level to a height of only one hundred and seventy-three feet. In other words, the channel is already excavated to a depth of one hundred and sixty feet through this seemingly impenetrable mass of rocky material.

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The length of time that will be required to complete the work is a matter of estimate. It was held that the construction of a sea-level canal, as at first contemplated, would require about fifteen years from the time when the Commission should enter upon its work. Perhaps the lock canal, now contemplated, including the construction of the locks, will not require a period longer than nine years from the active beginning of the work.

It should be remembered that the use of the words *east* and *west* in describing the canal are apt to be confusing; for, owing to the peculiar configuration of the isthmus the Atlantic lies to the westward and the Pacific to the eastward, where the canal line is drawn.

The work of constructing the canal is as yet in its inception. Its progress will be a matter of interesting current history for years to come. A brief *résumé* of the leading facts in the history of the canal project thus far is as follows:

The Suez Canal (which was opened in 1869) having proved a success, the great French engineer and promoter who had undertaken it, Ferdinand de Lesseps, turned his attention to the Isthmus of Panama, with the purpose of conducting there a similar French enterprise. The work began under great disadvantages in 1879, and came to a disastrous termination fourteen years later. Then came the op-

portunity of the United States. We were bound by an agreement with Great Britain known as the Clayton-Bulwer treaty (1850) in reference to a projected international canal through the territory of Nicaragua. By agreement this treaty was abrogated in 1903, and the Hay-Herran treaty was negotiated at Washington between the United States and the Republic of Colombia, to which Panama then belonged. By this treaty we were to secure the right to construct the canal across the isthmus, we guaranteeing to pay to Colombia the sum of ten million dollars on the completion of the work.

The Colombian Government, hoping doubtless to exact a larger sum from us, refused to ratify the treaty. By a sudden *coup*, the people of Panama declared their independence, which was immediately recognized by the United States, and entered into a liberal treaty with us, in accordance with which we secured in perpetuity "the use, occupation, and control" of a Canal Zone extending five miles on each side of the canal line, from the Atlantic eastward to the Pacific, together with a concession of further authority and rights in case it should be needed to exercise them for the conservation of American interests in the isthmus.

1899 Congress had authorized President McKinley to appoint an "Isthmian Canal Commission,"

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to make an investigation as to the most practicable and feasible route for an inter-oceanic canal, to be the property of the United States.

The choice between the routes offered, respectively, by Panama and Nicaragua, was for some time a matter of much controversy at home. It was settled by the treaty with Panama, related above, which is known as the Hay-Varilla treaty. It remained to purchase of the French Canal Company (which had been reorganized) all its rights and property in the Canal Zone. This was effected by the payment of forty million dollars, which amount was authorized by Congress and turned over to the company by President Roosevelt.

A Canal Commission of seven members was appointed, and General W. H. Taft, Secretary of War, was directed to undertake the supervision of the work.

The Commission went to Panama in April, 1904. It concerned itself with the preliminary work of investigations and plans until 1905, when the President secured the resignation of all the members, and turned the work over to a committee of three of the seven, Chairman Shonts being given the largest discretion. Judge Magoon was appointed Governor of the Canal Zone and Minister to the Republic of Panama.

Whether the work of constructing the canal shall be performed in parts by companies of contractors,

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whether directly by the Commission reorganized, or whether directly by the Administration, acting through one or more of its Departments, or through a committee appointed by the President, is not yet fully determined. Perhaps various plans may be successively tried in the long time required for the completion of the vast enterprise. The resignation of the members of the Commission, and the later withdrawal of some of the President's committee, have added to the uncertainties of the situation.

As one of our nation's "detached possessions," the Canal Zone should be made familiar to the pupils in all our schools. It will be well for the teacher to caution them against the confusion which is apt to arise from the use of the words *east* and *west* in reference to the canal, and to show clearly the configuration of the isthmus and the position of the canal route with reference to the two oceans. It will be well for the pupils to note the location of the cities at the terminals—Colon and Panama—since there will be occasion to read many news dispatches from them in future; also to remember that *Colon* is but a new name for the old city of Aspinwall, with the old name of which their parents were probably familiar in years gone by.

BOOKS FOR REFERENCE RELATING TO THE SUBJECT.

Pepper's "Panama to Patagonia—The Isthmian Canal."
Forbes-Lindsay's "Panama—The Isthmus and Canal."
President Roosevelt's Special Message of Dec. 17, 1906.
Recent volumes of magazines and newspapers.

VI.

RECLAIMING OF ARID LANDS IN THE WEST.

The West is divided from the East by a boundary line which is not imaginary. It is a plain mark on the face of the earth, and no man made it. It is the place where the region of assured rainfall ends, and the arid region begins. There have formerly been some costly doubts about the precise location of this line, but these have been dispelled by experience; and the lesson learned in hardship and impressed by disaster is learned for all time. The momentous boundary line is that of the ninety-seventh meridian, which cleaves in twain the Dakotas, Nebraska, Kansas, Oklahoma, and Texas. East of this line there is a rainfall which is accepted as reliable, though there are alternate disasters of drought and flood, varying in their effects from short crops to total failures.—William E. Smythe.

Since the ninety-seventh meridian west from Greenwich is almost midway between the Atlantic and the Pacific, it will be seen that half of our national domain lies within what is called the arid region; and since the western half of the country must depend very largely upon artificial supplies of water for fertility and value, the vast importance of the subject of irrigation becomes apparent to all.

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The arid region was formerly known as the Great American Desert. It was supposed to be largely uninhabitable and valueless. With the building of railways to the coast, the desert began to be reclaimed. The theory was advanced that rainfall follows the cultivation of the soil, and that a patient effort at farming would be rewarded by an increase in the quantity of water precipitated from the clouds. This proved to be largely a delusion; for while the rainfall at times in the reclaimed areas might prove fairly sufficient for agricultural purposes, it could not be depended upon. There were ruinous times of drought, extending over a period of years.

The American farmer cannot take the chances of occasional results from continued labor and investment of capital. The principal dependence of the arid region in future must be upon irrigation; and this art has now acquired a prominence never before known in human history.

WHAT IRRIGATION WILL ACCOMPLISH.

It is a popular error that desert land reclaimed through irrigation is at best inferior to the land which receives an adequate amount of rainfall. As a matter of fact, desert lands thus reclaimed are the most fertile in the world. There are certain components of the soil that promote its fertility, which are washed away and wasted by rains, but which remain in the arid regions, thus giving to irrigated

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lands a positive superiority to the lands of almost ideal rainfall. It has not been supposed that the western half of the United States would ever become thickly settled, as the eastern half has been. There are many, however, who now declare that the western half will prove actually the better of the two. Irrigated lands will always be the possession of small farmers, with diversified crops. These lands are adapted to "intensified production." The vast agricultural estates of the regions in which rainfall abounds will be wanting, but they are not so desirable for the community at large. Small farmers develop neighborhoods and neighborly feeling. They promote the equalization of wealth.

THE EARLIEST EXPERIMENT OF IRRIGATION IN THE UNITED STATES.

The first demonstration of the practical value of irrigation in reclaiming the American Desert was given by the Mormons in Utah. Late in July in the year 1847, the first caravan of these religious enthusiasts reached the valley of the Great Salt Lake. It was a beautiful scene that they beheld; but the lake before them was a dead sea, and the land about it was so hard that the steel point of a plow could scarcely cleave it. The surface was powdered with alkali.

With the quickness of genius the Mormon leader directed that a canal be dug, to carry and spread over

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a level tract the waters of a large creek which flowed into the lake. This was done with great difficulty, but the success achieved was instantaneous and marvelous. Utah is to-day a hive of industry, and all its fertility is due to the artificial supply of water for its farms.

THE GREELEY EXPERIMENT.

"The Union Colony of Colorado" was organized at a public meeting held in Cooper Institute, New York, over which Horace Greeley presided, in 1869. The settlement was begun in the following year, on the railway line then in process of construction to connect Denver with Cheyenne. From the first, the dependence upon irrigation was recognized, and the company constructed irrigating canals and connections at the very outset. These cost twenty times the amount calculated upon, but they proved remunerative in the long run, though the colonists were sadly mistaken at first in supposing that the region was adapted to fruit culture rather than to general farming.

It was fortunate for the Greeley colonists that their water supply was not suffered to pass into the hands of a private company—a monopoly. As the colonists had shared in the great expense of the irrigating works, they likewise shared in the returns from these; for while the farms were owned by in-

dividuals, the water supply was the property of the company as a whole.

Following the examples set by the Mormons in Utah, and the Colorado colonists at Greeley, various communities in all the States of the arid region have developed plans for the artificial supply of water. These plans have been various both as to the means of obtaining and distributing the water, and as to the ownership and control of the supply.

THE GARDEN CITY EXPERIMENT.

In Finney county, Kansas, wheat farming suddenly developed to a large extent in the late '70's, and a grist mill was planned. A ditch was dug to divert a portion of the water of the Arkansas river to the mill site; but the mill itself was not built, for the great sowing of wheat—some thousands of acres—came to nothing. This was in the drought of '78. The farmers generally gave up in despair. One of the number, however, whose land adjoined the ditch, secured permission to make use of its idle waters, and with astonishing results. "Kansas," says Smythe, "is the mother of irrigation on the plains." Within twelve years, nearly three millions was expended in the construction of irrigating canals, which aggregated some hundreds of miles in length. Then a new obstacle arose. The Arkansas river, on which these canals depended for their water supply, comes down from the State of Colorado;

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and the people of that State began to use so much of the water in its upper courses that the Kansas supply was cut off, and the large expenditure for canals was rendered useless.

Again the people of Finney county, in the vicinity of Garden City, experimented. They found that water could be pumped from wells of very slight depth. By means of windmills located on the most elevated portions of their farms, they were able individually, to raise and distribute the water required by their fields. Smythe states that an investment of two hundred dollars in such a place will suffice for the permanent watering of about ten acres. This plan is followed very generally in the arid portions of the State, wherever the supply of water exists near the surface of the ground.

IRRIGATION ON THE PLAINS.

Nebraska is better supplied than Kansas with rivers from which irrigating canals can take the needed water. Some dependence is likewise placed upon wells, though the water is apt to lie at a considerable distance below the surface, and often is obtained only with much difficulty and at large expense. In the Dakotas much dependence is placed upon artesian wells. Where water is taken from the rivers, pumping is generally necessary, since the beds of the

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streams are deep, and much of the country is almost as level as a floor. There are thousands of artesian wells in these twin States.

IRRIGATION AS A NATIONAL POLICY.

In January of 1901, Representative (later Senator) Francis G. Newlands, of Nevada, introduced in Congress a bill which, after much discussion and some amendment, became a law in the following year. This law authorizes the Secretary of the Interior to apply moneys derived from the sale of public lands to the construction of canals and reservoirs for irrigation purposes. The law applies to sixteen States and Territories. Smythe thus sums up the leading features of the measure: "Provision for the withdrawal from entry, in the discretion of the Secretary of the Interior, of all public lands required for reservoirs or canals, or susceptible of irrigation from proposed works; pro-rating the cost among the lands irrigated, and providing for the repayment of the amount to the reclamation found in ten annual instalments, making the water right perpetually appurtenant to the land, with beneficial use the basis, the measure, and the limit of the right; providing that land could be taken only under the homestead law, with its requirements for actual settlement; and permitting the sale of water rights to land in private ownership, but only in small tracts."

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In the first annual message of President Roosevelt to Congress, in 1901, he advocated some governmental measure for securing irrigation in the arid lands. The Newlands law was signed by the President on June 27, 1902.

THE TRUCKEE-CARSON WORKS.

By July, 1905, the funds available for governmental irrigation works had reached nearly thirty millions of dollars. The first great experiment of this nature was made in Nevada—the State in which the need seemed greatest. A canal was built to divert the water from the Truckee river to the Carson river, a distance of more than thirty miles. A great dam in the Carson is the distributing point. It is estimated that seven years more will be required to complete the entire plant, which is expected to irrigate 375,000 acres, and which will cost probably nine million dollars.

OTHER GOVERNMENTAL PROJECTS.

The Interior Department is constantly making investigations and developing plans for other governmental irrigation works. These plans are not always divulged until completed.

Among the plans now under way are those of the Salt river (at the Roosevelt dam), in Arizona; of the Klamath, in Oregon; of the Minidoka, in Idaho; of the Milk river, in Montana; of the Honda, in

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New Mexico; of Bismarck, in North Dakota; of the North Platte, in Nebraska and Wyoming; of the Shoshone, in Wyoming; of the Bellefourche, in South Dakota; of the Malheur, in Oregon; and of the Colorado, in Arizona and Southern California.

A singular and disastrous experience in what has been known as the Colorado Desert illustrates the difficulties and dangers that may sometimes be incurred in carrying out plans for irrigation on a large scale. The Colorado Desert occupies a peculiar sink, or hollow, which lies below the level of the sea. Doubtless at one time it was connected with the sea; but the connection was cut off in some manner by a rise of the ground to the south, and the waters of the basin soon disappeared by evaporation. The region of this desert lies across the south line of California, extending for many miles into Mexico. South of the State line it reaches the high western bank of the Colorado river, which separates it from Arizona.

A sluice, fifty feet wide, was cut in the west bank of the Colorado, in Mexican territory, by a private corporation, with a view to making use of the water through the wide stretch of desert to the northward. A successful experiment had been previously made in taking water from the Colorado river many miles above; and the region irrigated by means of it had proved of wonderful fertility. The Southern Pacific

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Railway passed through the region, and various prosperous towns were springing up.

The new enterprise, however, was disastrous in its results. In May, 1905, the vast flood of water caused by the melting of the snows on the mountains swept away the abutments of the sluice, and spread out in a waterfall nearly three-quarters of a mile wide. The flood of waters defied all efforts at control, and formed the "Salton Sea," which has been an engrossing topic of current interest for the past two years. Towns have been swept away and buried deep beneath the waters. The Southern Pacific Railway has been compelled to move its track many miles, and repeatedly. The "Sea" has attained a length of sixty-five miles, and a width of about forty miles. Whether the efforts now making to stop its further expansion shall be successful or not, remains to be seen. This experience offers a caution to be observed in the construction of dams and sluices, where the waters are to be impounded in great quantities for economic distribution.

BOOKS FOR REFERENCE RELATING TO THE SUBJECT.

Smythe's "Conquest of Arid America."

Recent volumes of magazines and newspapers.

VII.

THE VALUE OF HANDWORK IN PUBLIC SCHOOLS.

The success achieved by the kindergarten in America naturally awakened the suggestion that the training of the hand in various forms of mechanism might well be extended to the primary departments of the public schools.

The feasibility of this was demonstrated in the schools of La Porte, Ind., in the work of W. N. Hailmann, who set forth in his book of "Primary Methods" a scheme of object teaching and manual training for the primary grades. In the preface to this book, which was issued twenty years ago, he said:

"The advocates of industrial training are met with the objection that the school is already loaded down with work, and that it will be ruinous to the child to add fresh burdens. The hand training here proposed is not open to this objection. *It removes burdens.* It enables the child to gain the knowledge which the current subjects of school instruction represent, in a manner more suited to his tastes and powers; in a complete, all-sided, active, ideal child life, in which he is upheld and strengthened by the constant joy of success, the steady glow of growing power."

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William J. Shoup, of the city schools of Dubuque, Ia., uttered a strong appeal for the training of the hand in his book of "Didactics," which was widely studied by teachers in the last decade.

"What," he asked, "has the kindergarten to do with the work of the ordinary school?" "Much, in many ways," he answered. "First of all, it illustrates the great principle of the necessity of making school work attractive to the little learners. * * * If it succeeds in impressing the truth that activity is one of the Heaven-implanted laws of childhood, and induces our teachers to furnish employment for each little pair of willing hands, it will bring joy and gladness to many a childish heart, and engender such a love for school that study will be a delight."

Shoup was disposed to deem handwork even more essential in the regular school work than in the kindergartens. He said, "It is believed by many of the most thoughtful educators that the highest utility of the kindergarten system is attained *when it is applied in connection with primary school work*, rather than when entirely divorced from it."

The value of the object lesson had long been recognized; but its true nature and use, he contended, had not been fully grasped. It was understood by many to mean simply the holding up of an object and talking about it.

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"The real object of these exercises," he said, "should be to induce the children to see with their own eyes, hear with their own ears, taste with their own tongues, then idealize these perceptions, and give their conceptions expression in accurate language."

Shoup dissented from the common theory that one of the prime purposes of the object lesson is to cultivate the senses of the child. On this question he said: "It is not the province of the object lesson to provide our pupils with the senses themselves—nature usually does this—but rather to give them skill in their use, to train them to give heed to the impressions which are made in the mind through the senses—to cultivate, in short, the *conceptive* rather than the *perceptive* faculties, though of course this must be done through the *perceptive* faculties."

The work begun by John Sheridan Neligh in the "Primary Industrial School" at Columbus, Ga., had in view the training of the hands of young children, especially in those forms of activity which add to the comfort and beauty of the home; and as an experiment among the pupils of an industrial class, whose means for furnishing the home were apt to be meager, it attracted wide attention. This was, in part, an adaptation of the *slojd* system of the Scandinavian lands. Indeed the word *slojd* (handicraft) has become Americanized under the form of *sloyd*.

“Manual training in the public schools of Europe,” says Ham, in his notable book entitled “Mind and Hand,” “can scarcely be called educational, since the pupils usually make articles for household use. The purpose is purely industrial, and hence the mental culture received in the course of the manual exercise is the mere incident of a mechanical pursuit. But the making of things in the schools of Europe is gradually extending.”

It is so in the United States. The large cities have their “industrial schools” for special training, and these are receiving an ever-increasing patronage. But industrial training is not confined to these. It is creeping into the public schools of the smaller cities and towns, as an adjunct to the regular work of the schools in the various grades.

Ham speaks with characteristic optimism of the ideal school of the future in the following terms:

“The ideal school is an institution which develops and trains to usefulness the moral, physical, and intellectual powers of man. It is what Comenius called humanity’s workshop, and in America it is becoming the natural center of the public school system. The building, well designed for occupancy, is large, airy, open to the light on every side, amply provided with all appliances requisite for instruction in the arts and sciences, and finished exteriorly and interiorly in the highest style of useful and

beautiful architectural effects. The distinguishing characteristic of the ideal school building is its chimney, which rises far above the roof, from whose tall stack a column of smoke issues; and the hum and whir of machinery is heard, and the heavy thud of the sledge-hammer, resounding on the anvil, smites the ear.

“Is it, then, a factory, rather than a school?” “No. It is a school—the school of the future; the school to dignify labor; the school that is to generate power; the school where every sound contributes to the harmony of development; where the brain informs the muscle, where thought directs every blow, where the mind, the eye, and the hand constitute an invincible triple alliance. This is the school that Locke dreamed of, that Bacon wished for, that Rousseau described, and that Comenius, Pestalozzi, and Froebel struggled in vain to establish.”

John Ruskin, voicing a similar sentiment, says in his “Fors Clavigera:”

“To know the *use* of either land or tools, you must know what useful things can be grown from the one and made with the other. And therefore, to know what is useful and what is useless, and be skillful to provide the one and wise to scorn the other, is the first need for all industrious men. Wherefore, I propose that schools should be established wherein the use of hand and tool shall be

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taught conclusively—in other words, the science of agriculture (with associated river and sea culture), and the nobler arts and exercises of humanity.”

The moral influence of manual training as a part of the education of the masses of the people has been the subject of much comment. It has been noted that five-sixths of the four hundred and eighty-seven convicts received at the State prison for the eastern district of Pennsylvania had been pupils in the public schools, and that the same number were without trades; that four out of five in the penitentiaries of Illinois have no training in hand work of any kind.

Commenting upon these facts, Hand remarks thus:

“The fact that the skilled workman is far more likely than the common laborer to keep out of the penitentiary is a powerful argument in favor of joining manual training to the mental exercises of our common schools.”

There is another consideration which he adds, as follows:

“The general adoption of a comprehensive system of education in the public schools would quickly dispel the unworthy prejudice against labor which taints the minds of the youth of the country. The splendid career which this age opens to the educated mechanic should be made clear to the vision of every

boy in the land; and he will see, in the tools he is taught to handle, the key not only to fair success, but also to wealth and fame."

As an experiment to test the adaptation of hand training to all the nine grades represented in a village school, the public school of Hyannis, Mass., was made the training department of the State Normal School situated at that place. William A. Baldwin, Principal of the institution, writes thus of its work: "If your visit were made at three o'clock in the afternoon, you would see a school very much like the ordinary village school, housed in a modern brick building of six rooms, and doing the usual schoolroom work. At five minutes after three, you would see a transformation. The school becomes a manufactory, in which each child is making something. In the first room, one group of children, working in pairs, is engaged in weaving rugs for the doll's house; some are braiding, and others are sewing their braided raphia into mats. In the second-year room a group of the children are making furniture of tag board, while the other division of the class has gone to work in the garden. In the third-year room, the third-grade children are making raphia baskets, while the fourth-grade children are out working in their garden. Of the children in the grammar grades, some boys have gone to the attic, to make rattan baskets; one group of girls is at the

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dormitory, sewing on the machine; the eighth-grade boys and girls are at work in their garden, and one class has taken an expedition into the fields, to study the birds. * * *

“It is worth going far to see the new spirit which shines in their faces, and the new attitude which has been developed toward nearly all of the school work. This is evident throughout the day, and in all the grades.”

A hint of the coming training of the hand and development of “faculty” was given many years ago by Harriet Beecher Stowe, in her story of “The Minister’s Wooing.” “Faculty,” remarked Mrs. Stowe, “is the greatest virtue, and shiftlessness the greatest vice, of Yankee men and women. To her who has faculty, nothing shall be impossible. She shall scrub floors, wash, iron, bake, brew, and yet her hands shall be small and white; she shall have no perceptible income, yet always be handsomely dressed; she shall have not a servant in her house—with a dairy to manage, hired men to feed, a boarder or two to care for, unheard-of pickling and preserving to do—and yet you commonly see her every afternoon sitting at her shady parlor window behind the lilacs, cool and easy, hemming muslin cap-strings or reading the last new book. She who hath faculty is never in a hurry, never behindhand. She can always step over to show Mrs. Jones how she makes

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her pickles green, and be ready to watch with poor old Mrs. Simpkins, who is down with the rheumatism."

The design of the new education is to prepare men and women for *complete living*; and this necessarily involves the training of the hand concurrently with the training of the mind.

A recognition of the importance of hand training in the public schools is seen in the legislation of many States within recent years. More and more are the legislatures providing for the introduction of manual training, in its various forms, into the public schools, as adjuncts to the intellectual training. Beginning generally with the larger cities, but gradually extending the plans to include the smaller communities, the legislatures have either appropriated State moneys or permitted the use of local funds for the establishment of working rooms with machinery, tools and appliances, and working material, and for the payment of skilled instructors to conduct the work.

BOOKS FOR REFERENCE RELATING TO THE SUBJECT.

Ham's "Mind and Hand."
Hoffman's "Sloyd."
Baldwin's "Industrial-Social Education."
Sickles' "Wood Working."
Golden's "Wood Turning."
Kevri's "Among Country Schools."

Books for Further Study

The Educational Theories of Rousseau.

Rousseau's Emile, 157 pp.; paper, \$0.25; cloth, \$0.90.

Rousseau's Education According to Nature, 233 pp.; cloth, \$1.00.

Hinsdale's Art of Study, 266 pp.; cloth, \$1.00.

The Doctrine of Interest.

DeGarmo's Interest and Education, 226 pp.; cloth, \$1.00.

Herbart's Science of Education, 285 pp.; cloth, \$1.00.

Keith's Elementary Education, 339 pp.; cloth, \$1.25.

A Discussion of Herbert Spencer's Theory of Punishment.

Spencer's Education, 309 pp.; cloth, \$0.75.

MacCunn's Making of Character, 222 pp.; cloth, \$1.25.

The Use of the Study Period.

Bagley's Educative Processes, 349 pp.; cloth, \$1.25.

Roark's Method in Education, 348 pp.; cloth, \$1.00.

The Panama Canal.

Forbes-Lindsay's Panama—The Isthmus and the Canal, 368 pp., maps and illustrations; cloth, \$1.00.

Pepper's Panama to Patagonia, 397 pp., maps and illustrations; cloth, \$2.50.

Reclaiming of Arid Lands in the West.

Smythe's Conquest of Arid America, 360 pp., maps and illustrations; cloth, \$1.50.

The Value of Handwork in Public Schools.

Baldwin's Industrial-Social Education, 147 pp., illustrations; cloth, \$1.50.

Hoffman's Sloyd, 242 pp.; cloth, \$1.00.

Ham's Mind and Hand, 464 pp., illustration; cloth, \$1.25.

Kevri's Among Country Schools, 366 pp.; cloth, \$1.25.

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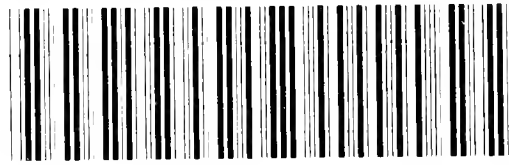
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